

Claim Amendments

Claims 1-40 (cancelled).

41 (previously presented). A method for treating a subterranean formation, the method comprising the steps of:

introducing a swellable composition into the formation in the area requiring treatment, wherein the swellable composition comprises:

a water soluble polymer;

a water soluble crosslinking system;

wherein the amounts of the polymer and the crosslinking system are effective to form a substantially uniformly reacted gel structure; and a swelling agent in an amount calculated to maintain or increase the volume of the gel a predetermined percentage when the swelling agent contacts the aqueous solution.

42 (previously presented). The method of claim 41 wherein the composition is mixed at the site of the formation immediately before introducing the composition into the formation.

43 (currently amended). The method of claim 41 wherein the subterranean formation comprises an oil or ~~and~~ gas well and wherein the treatment comprises plugging an oil or gas well to be abandoned.

44 (previously presented). The method of claim 43 wherein the oil and gas well defines a wellbore and wherein the method further comprises the steps of:

before introducing the swellable composition into the wellbore, circulating a fluid through the wellbore to remove existing fluids;

after introducing the swellable composition into the wellbore, removing equipment and tools from the wellbore; and

closing the wellbore to permit gelation and swelling of the composition

45 (previously presented). The method of claim 44 wherein the step of circulating the fluid through the wellbore is accomplished by using the composition as the circulating fluid.

46 (previously presented). The method of claim 43 wherein the method further comprises the step of:

after abandoning the wellbore, restoring the well to service by circulating the composition out of the wellbore with a fluid.

47 (previously presented). A method for removably plugging an oil or gas well to be abandoned, wherein the well defines a wellbore and wherein the method comprises the step of plugging the wellbore with a composition, the composition being removable from the wellbore by circulating fluid through the wellbore.

48 (previously presented). A method for restoring to service an abandoned oil or gas well plugged with a composition removable from the wellbore, the method comprising the step of removing the composition from the wellbore by circulating a fluid through the wellbore.

49 (previously presented). The method of claim 41 wherein the subterranean formation comprises a producing oil or gas well and wherein the treatment comprises plugging and abandoning an oil or gas zone in the well.

50 (previously presented). The method of claim 49 wherein the oil or gas well defines a wellbore and wherein the method further comprises the steps of:

introducing the swellable composition into the wellbore,
localizing the zone to be plugged;
introducing the swellable composition into the wellbore to a
predetermined depth above and below the localized zone;
sealing the swellable composition in the wellbore adjacent the
localized zone; and
permitting gelation and swelling of the composition.

51 (previously presented). The method of claim 41 wherein the subterranean formation comprises an oil or gas well, the well defining a wellbore and wellbore casing, and wherein the treatment comprises sealing a leak in wellbore casing.

52 (previously presented). The method of claim 51 wherein the method further comprises the steps of:

before introducing the swellable composition into the
wellbore, isolating the leak;
introducing the swellable composition into the
environment in the area of the leak;
removing the swellable composition from wellbore;
permitting gelation and swelling of the composition in
the area of the leak; and
restoring the well to service.

53 (previously presented). The method of claim 41 wherein the subterranean formation comprises an oil or gas well having failed a mechanical integrity test and wherein the treatment comprises repairing the oil or gas well.

54 (previously presented). The method of claim 53 wherein the well defines a wellbore and comprises production casing and tubing and wherein the method farther comprises the steps of:

introducing the swellable composition into the annular space between the casing and the tubing;
forcing the swellable composition through the leak in the casing;
permitting gelation and swelling of the composition.

55 (previously presented). The method of claim 41 wherein the subterranean formation comprises an oil or gas well having a water bearing zone and wherein the treatment comprises reducing the amount of water produced from water bearing zone of the well.

56 (previously presented). The method of claim 55 wherein oil or gas well defines a wellbore and wherein the method further comprises the steps of:

introducing the swellable composition into the water producing zone;
removing the swellable composition from the wellbore;
allowing gelation and swelling of the composition in the water bearing zone; and
restoring the well to service.

57 (New). A method of plugging an oil or gas well having a wellbore, comprising:

introducing a swellable composition into the wellbore, wherein the swellable composition comprises:
water;
a water soluble polymer;
a water soluble crosslinking system;
wherein the amounts of the polymer and the crosslinking system are effective to form a substantially uniformly reacted gel structure; and
an effective amount of a swelling agent which is both capable of remaining substantially dehydrated during cross-linking of the gel structure and receptive to substantial hydration after presence during such cross-linking.